California Climate Action Team Technology Symposium

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www.CalCEF.org

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California Expects Substantial GHG Savings From Its Renewable Energy Programs

Programs covered by the climate plan include the accelerated RPS program (33% by 2020) and the new California Solar Initiative (3,000 MW over ten years).

- Total savings in 2010 - 22 million tons CO2E
  - **RPS and Solar Initiative - 5.4 million tons, @25%**
- Total savings in 2020 - 68 million tons CO2E
  - **RPS and Solar Initiative - 14 million tons, @21%**

- In 2005 California produced 10.7% of its electricity from eligible renewables:

Wind	1.5%
Geothermal	5.0%
Biomass	2.1%
Solar Thermal Electric	.2%
Small Hydropower	1.9%

Gross GWh, CEC data

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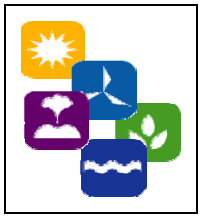
These Aggressive Goals are Achievable

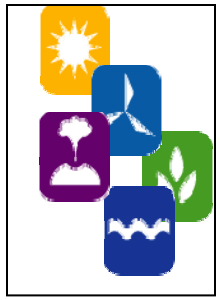
Can California reach its renewable energy goals? Estimates suggest that we have more than enough technical potential.

29,965 GWh/yr



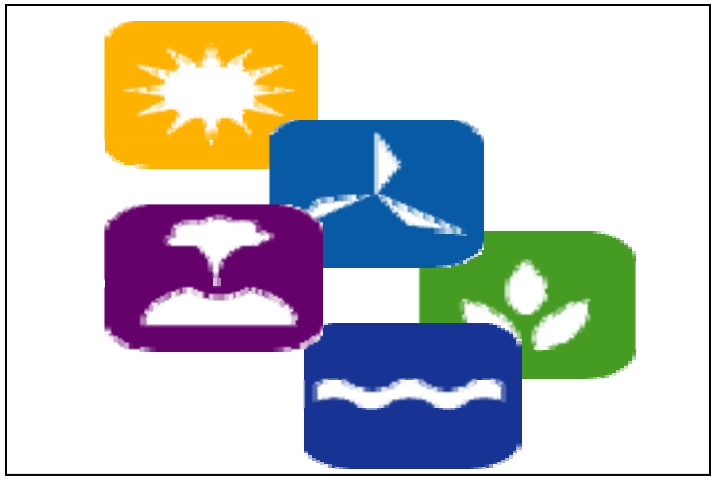
2003 – 12%

55,170 GWh/yr



20% by 2010

262,150 GWh/yr



Technical Potential

Source: California Energy Commission

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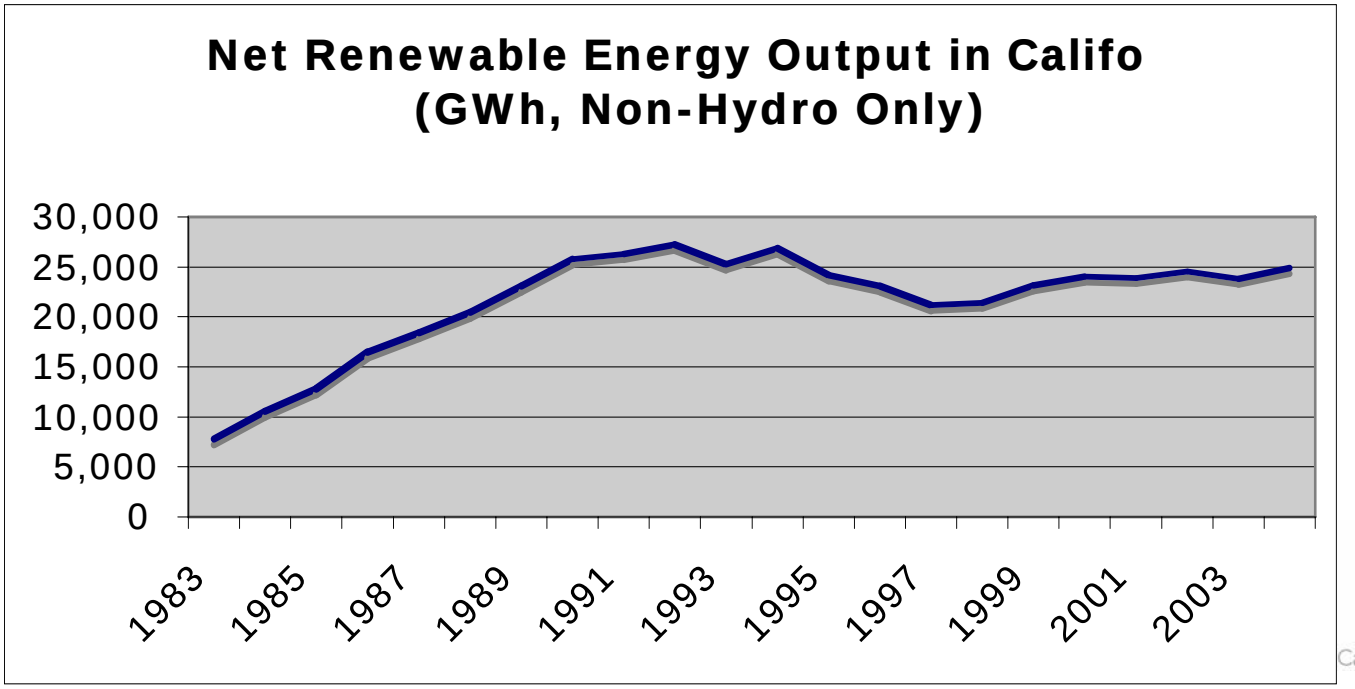
Renewable Energy in California - Changing with Market Design Trends

- For decades, California led the US and the world in renewable energy procurement via its public and investor-owned utilities.

- From its peak in the early 1990s, however, renewable generation declined amidst the uncertainty leading up to deregulation.



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Rebuilding from the Crisis: The Middle Way, or Managed Wholesale Competition

- The systemic failure of the California marketplace allowed us to fundamentally reconsider how best to support renewable energy.

- The Renewables Portfolio Standard was designed to combine the best elements of competition - lower costs over time, technological improvements - with the stability and certainty of the regulated utility model.

- This is competition at the *wholesale* level, mediated by the utility and the regulatory body, while *retail* electric service remains stable and predictable.

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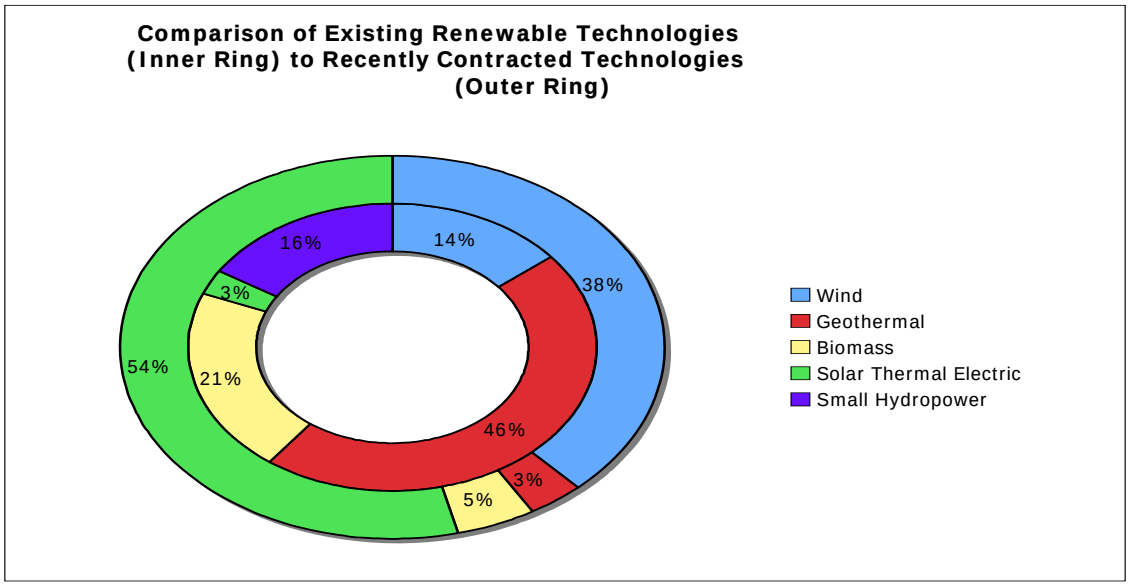
Is “Managed Competition” Working in California?

- How well has the RPS balanced competition and steady development of clean energy infrastructure?
  - Between the first RPS solicitation by the utilities in 2004 and October 2005 , the state approved contracts for up to 3,000 MW of new renewables:



  - Note: inner ring is generation; outer ring is capacity

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Renewable Energy and California Load

Electricity demand in California is highly variable, roughly doubling from trough to peak.

Policy is working to smooth these peaks, but all aspects of the renewable energy challenge - policy, project finance, and technology choice - must be attuned to load patterns to ensure maximum cost-effectiveness.

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

- Generation (top) and Load for June 25 2006

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